REMARKS

Claims **6-73** have been added by this submission. No new matter has been added.

CONCLUSION

In view of the remarks set forth herein, the application is believed to be in condition for allowance and a notice to that effect is solicited. Nonetheless, should any issues remain that might be subject to resolution through a telephonic interview, the Examiner is invited to telephone the undersigned.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner For Patents, Washington, D.C. 20231, on June 17, 2002.

Attorney for Applicant(s) Date of Signature 6/17/02

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

6. (New) The network management architecture of claim 4, wherein
said master node maintains second topology information,
said backup node is configured to update said first topology information by receiving said second topology information from said master node.

7. (New) The network management architecture of claim 3, further comprising:
a standby node, wherein
said standby node is configured to perform said network management activity, if said failure prevents said master node and said backup node from performing said network management activity.

8. (New) The network management architecture of claim 7, wherein
said standby node maintains first topology information regarding a topology of said network.

9. (New) The network management architecture of claim 8, wherein
said backup node maintains second topology information,
said backup node is configured to update said first topology information by sending said second topology information to said standby node.

10. (New) The network management architecture of claim 9, wherein
said master node maintains third topology information,
said master node is configured to update said second topology information by sending said third topology information to said backup node.

11. (New) The network management architecture of claim 8, wherein
said backup node maintains second topology information,
said standby node is configured to update said first topology information by receiving said second topology information from said backup node.

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12. (New) The network management architecture of claim 11, wherein
said master node maintains third topology information,
said backup node is configured to update said second topology information by receiving said third topology information from said master node.

13. (New) The network management architecture of claim 7, further comprising:
a plurality of standby nodes, wherein
said standby node is a one of said standby nodes,
each of said standby nodes is assigned a priority, and
said each of said standby nodes is configured to perform said network management activity, if said failure prevents said master node, said backup node and any ones of said standby nodes having a higher priority than said each of said standby nodes from performing said network management activity.

14. (New) The network management architecture of claim 13, wherein
each of said standby nodes maintains first topology information regarding a topology of said network.

15. (New) The network management architecture of claim 14, wherein
said backup node maintains second topology information,
said backup node is configured to update said first topology information by sending said second topology information to said each of said standby nodes.

16. (New) The network management architecture of claim 15, wherein
said master node maintains third topology information,
said master node is configured to update said second topology information by sending said third topology information to said backup node.

17. (New) The network management architecture of claim 14, wherein
said backup node maintains second topology information,
said each of said standby nodes is configured to update said first topology information by receiving said second topology information from said backup node.

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18. (New) The network management architecture of claim 17, wherein
said master node maintains third topology information,
said backup node is configured to update said second topology information by
receiving said third topology information from said master node.

19. (New) A method for centralized control of a network, wherein said network comprises a plurality of nodes, comprising:
creating an authoritative topology database on a master node of said network, wherein
each of said nodes is communicatively coupled to another of said nodes by at least one of a plurality of optical links,
said authoritative topology database contains topology information regarding a topology of said network,
said master node is configured to manage said network by virtue of being configure to perform a network management activity, and
said network management activity comprises at least one of discovery, implementation, assurance, and restoration, of a virtual path.

20. (New) The method of claim 19, wherein said creating said authoritative topology database comprises:
sending an IAM_MASTER message to a neighbor node, wherein said neighbor node is a neighbor of said master node.

21. (New) The method of claim 20, wherein said creating said authoritative topology database further comprises:
sending a positive reply from said neighbor node to said master node, wherein
said reply comprises at least one of
a node identifier for said neighbor node,
a node type of said neighbor node, and
a system inventory for said neighbor node.

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22. (New) The method of claim 21, wherein said creating said authoritative topology database further comprises:

forwarding said IAM_MASTER message from said neighbor node to another of said nodes.

23. (New) The method of claim 22, wherein said creating said authoritative topology database further comprises:

sending another positive reply from said another of said nodes to said neighbor node, wherein

said another positive reply comprises at least one of

a node identifier for said another of said nodes,

a node type of said another of said nodes, and

a system inventory for said another of said nodes.

24. (New) The method of claim 19, further comprising:

synchronizing said authoritative topology database and a topology database maintained on one of said nodes.

25. (New) The method of claim 24, wherein said synchronizing comprises:

sending a copy of said authoritative topology database to said one of said nodes, wherein

said one of said nodes is a backup node,

said backup node maintains said topology database, and

said backup node is configured to perform said network management activity, if a failure in said network prevents said master node from performing said network management activity; and

replacing said topology database with said copy of said authoritative topology database.

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26. (New) The method of claim 25, wherein said synchronizing further comprises:

sending a copy of said authoritative topology database to another of said nodes, wherein

said another of said nodes is a standby node,

said standby node maintains another topology database, and

said standby node is configured to perform said network management activity, if said failure prevents said master node, said backup node and any ones of said standby nodes having a higher priority than said each of said standby nodes from performing said network management activity; and

replacing said another topology database with said copy of said authoritative topology database.

27. (New) A method for determining a topology of a network, wherein said network comprises a plurality of nodes, comprising:

receiving a message at a node, wherein

said message is sent by a master node, and

each of said nodes is communicatively coupled to another of said nodes by at least one of a plurality of optical links;

forwarding said message to a neighbor node, wherein said neighbor node is a one of said nodes that is a neighbor of said node; and

sending a positive reply to said master node.

28. (New) The method of claim 27, wherein said node and said master node are ones of said nodes.

29. (New) The method of claim 27, wherein said message is an IAM_MASTER message.

30. (New) The method of claim 27, further comprising:

determining if said message can be forwarded.

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31. (New) The method of claim 30, wherein said determining if said message can be forwarded comprises:

updating a hop count of said message;

comparing said hop count to a maximum hop count; and

forwarding said message if said comparison indicates that said message can be forwarded.

32. (New) The method of claim 27, further comprising:
comparing a version number of an executable image stored at said node and a version number in said message corresponding to said executable image.

33. (New) The method of claim 32, further comprising:
making a list of executable images stored at said node that require updating.

34. (New) The method of claim 32, further comprising:
if said comparison indicates that said executable image stored at said node requires updating,
requesting said master node forward a replacement executable, wherein said replacement executable is a copy of an executable stored at said master node corresponding to said executable image stored at said node, and
replacing said executable image stored at said node with said replacement executable.

35. (New) The method of claim 27, further comprising:
determining if a master node identified in said message is a master node identified in another message received by said node;
analyzing a hop count and a source node identified in said message, if said master node identified in said message is said master node identified in said another message, and
analyzing a node identifier of said master node identified in said message, otherwise.

36. (New) The method of claim 35, wherein said analyzing said hop count and said source node identified in said message comprises:
performing a first comparison between said hop count identified in said message and a hop count identified in said another message;
performing a second comparison between said source node identified in said message and a source node identified in said another message; and
dropping said message, if either of said first and said second comparisons fail, and

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determining if said message can be forwarded, otherwise.

37. (New) The method of claim 36, wherein said determining if said message can be forwarded comprises:

updating a hop count of said message;

comparing said hop count to a maximum hop count; and

forwarding said message if said comparison indicates that said message can be forwarded.

38. (New) A method for maintaining topology information regarding a topology of a network, wherein said network comprises a plurality of nodes, comprising:

sending a message from a master node to a backup node, wherein

each of said nodes is communicatively coupled to another of said nodes by at least one of a plurality of optical links;

receiving a reply from said backup node at said master node;

comparing information in said reply regarding a backup database maintained on said backup node with information regarding an authoritative database maintained on said master node; and

sending a copy of said authoritative database from said master node to said backup node, if said comparison indicates that said backup database should be updated.

39. (New) The method of claim 38, wherein said backup node and said master node are ones of said nodes.

40. (New) The method of claim 38, further comprising:

receiving said copy of said authoritative database at said backup node; and

replacing said backup database with said copy of said authoritative database.

41. (New) The method of claim 39, further comprising:

forwarding said copy of said backup database from said backup node to a standby node.

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42. (New) The method of claim 38, further comprising:
sending a copy of a dynamic database from said master node to said backup node.

43. (New) The method of claim 42, further comprising:
forwarding said copy of said dynamic database from said backup node to a standby node.

44. (New) The method of claim 38, further comprising:
forwarding said copy of said backup database from said backup node to a standby node;
storing said copy of said backup database as a standby database.

45. (New) The method of claim 44, further comprising:
maintaining synchronization between said authoritative database, said backup database and said standby database.

46. (New) A method for adding a path in a network, wherein said network comprises a plurality of nodes, comprising:
performing path discovery at a master node, wherein
each of said nodes is communicatively coupled to another of said nodes by at least one of a plurality of optical links,
said path discovery is performed by a route processor associated with said master node,
said path discovery is performed to identify said path, and
said path is between a source node of said nodes and a destination node of said nodes; and
if said path is successfully discovered,
adding said path to a topology database, and
sending an update message to a backup node, said update message comprising information regarding said path.

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47. (New) The method of claim 46, wherein said backup node and said master node are ones of said nodes.

48. (New) The method of claim 46, further comprising:

sending a positive response from said route processor to a system controller of said master node, if said path is successfully discovered.

49. (New) The method of claim 48, wherein said positive response comprises:

an ordered list of hops, wherein said ordered list of hops represents said path, and said path is between said source and said destination nodes; and

a connection identifier, wherein said connection identifier uniquely identifies said path within said network.

50. (New) The method of claim 49, further comprising:

sending another positive response to said requestor, if said positive response is received by said system controller, and

sending a negative response to said requestor, otherwise.

51. (New) The method of claim 46, further comprising:

sending information regarding said path to others of said nodes, if said path is successfully discovered.

52. (New) The method of claim 51, wherein each of said others of said nodes is a standby node.

53. (New) The method of claim 51, wherein said information regarding said path comprises an I/O map.

54. (New) The method of claim 51, further comprising:

communicating a reconfiguration message to ones of said nodes, said path comprising said ones of said nodes, if said path is successfully discovered.

55. (New) A method for deleting a path in a network, wherein said network

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comprises a plurality of nodes, comprising:

receiving a deletion request at a route processor of a master node, wherein

said deletion request comprises a connection identifier,

said connection identifier identifies said path,

said path is between a source node of said nodes and a destination node of said nodes,

said path comprising a plurality of said nodes,

said plurality of said nodes comprises said source and said destination nodes, and

each of said nodes is communicatively coupled to another of said nodes by at least one of a plurality of optical links;

communicating a reconfiguration message to each of said plurality of said nodes; and

deleting said path from a topology database, if said path is successfully deleted.

56. (New) The method of claim 55, further comprising:

sending an update message to a backup node, said update message comprising information regarding said path, if said path is successfully deleted.

57. (New) The method of claim 56, wherein said backup node and said master node are ones of said nodes.

58. (New) The method of claim 56, further comprising:

determining if said connection identifier is valid; and

sending a negative response from said route processor to a system controller of said master node, if said connection identifier is not valid.

59. (New) The method of claim 56, further comprising:

sending a positive response from said route processor to a system controller of said master node, if said path is successfully deleted.

60. (New) The method of claim 59, further comprising:

sending another positive response to said requestor, if said positive response is received by said system controller, and

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sending a negative response to said requestor, otherwise.

61. (New) The method of claim 55, further comprising:

communicating a reconfiguration message to ones of said nodes, said path comprising said ones of said nodes, if said path is successfully deleted.

62. (New) A method for changing a path in a network, wherein said network comprises a plurality of nodes, comprising:

receiving a connectivity change request at a master node, wherein

said path is between a source node of said nodes and a destination node of said nodes,

said path comprising a plurality of said nodes,

said plurality of said nodes comprises said source and said destination nodes, and

each of said nodes is communicatively coupled to another of said nodes by at least one of a plurality of optical links;

determining if ones of said nodes affected by said connectivity change request can be configured to effect said connectivity change request; and

updating a topology database to reflect a change in said path effected by said connectivity change request, if said ones of said nodes affected by said connectivity change request can be configured to effect said connectivity change request.

63. (New) The method of claim 62, wherein said determining is based on at least one of:

a current state of said network,

a service available in said network, and

a service requested in said connectivity change request.

64. (New) The method of claim 62, wherein said determining comprises:

sending a notification from said master node to said source node, for example, to initiate the identification of a new physical path.

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65. (New) The method of claim 64, wherein said sending determining further comprises:

initiating identification of a new physical path from said source node.

66. (New) The method of claim 62, wherein

said connectivity change request comprises a connection identifier, and

said connection identifier identifies said path.

67. (New) The method of claim 62, further comprising:

sending an update message to a backup node, said update message comprising information regarding said path, if said ones of said nodes affected by said connectivity change request can be configured to effect said connectivity change request.

68. (New) The method of claim 67, wherein said backup node and said master node are ones of said nodes.

69. (New) The method of claim 62, further comprising:

communicating a reconfiguration message to said ones of said nodes affected by said connectivity change request, if said ones of said nodes affected by said connectivity change request can be configured to effect said connectivity change request.

70. (New) The method of claim 69, further comprising:

committing a connectivity change requested in said connectivity change request, if said ones of said nodes affected by said connectivity change request can be configured to effect said connectivity change request.

71. (New) The method of claim 62, further comprising:

sending a positive response from said master node, if said ones of said nodes affected by said connectivity change request can be configured to effect said connectivity change request.

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72. (New) The method of claim 71, further comprising:

communicating a reconfiguration message to said ones of said nodes affected by said connectivity change request, if said master node sends a positive response.

73. (New) The method of claim 72, further comprising:

committing a connectivity change requested in said connectivity change request, if said master node sends a positive response.

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